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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/333,379	06/15/1999	LEROY G. HAGENBUCH	189405	4050

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EXAMINER
PECONE, RICHARD A

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Please find below and/or attached an Office communication concerning this application or proceeding.

NM

Office Action Summary	Application No. 09/333,379	Applicant(s) HAGENBUCH ET AL.	
	Examiner Richard A Pecone	Art Unit 2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 7/23/99, 8/4/99, 10/18/99, 1/8/01, & 1/15/02

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Introduction

1. Claims 1-20 of U. S. Application 09/333,379 filed on 15-June, 1999, are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> (Amended) A body of a vehicle for hauling material, the body made by the following process:
> (a) determining the desired location for the load center of gravity on a chassis of the haulage vehicle;
> (b) determining the desired volumetric capacity for the body;
> (c) establishing an initial line for the floor of the body, an initial linefor a front wall of the body and an initial inside body width;
> (d) developing a three dimensional volumetric model of a load to be carried in the body defined by the initial floor line, the initial front wall line and the initial inside body width using data collected from an anticipated point of use with the three dimensional volumetric model having a volume and a volumetric model center of gravity located on the chassis;
> (e) adjusting a set of design parameters of the body until the load model center of gravity is located proximate the desired location for the load center of gravity on the chassis from step (a) and the volume of the three dimensional volumetric model is substantially similar to the desired volumetric capacity from step (b); and
> (f) producing the body in accordance with the set of design parameters.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and

the dump body relative to the truck chassis due to hauling material loading conditions as in claim 1 (d and e). Its known in the art that FEA (UAI/Nastran) calculates body volumes, center of gravity of the body, and loading conditions or the strength properties of the body relative to different material volumes based on simulating and calculating both stress/strain distributions and concentrations due to different boundary conditions or adjusting the force conditions/design parameters of the volumetric load at different dimensions in the truck body, eg., establishing lines on floors and the side walls of the body as in claim 1 (a thru f) (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). While Chatham teaches about using FEA , he does not specifically teach about applying this analysis to the design method/concept of aligning the truck body's load center of gravity to the load center of gravity of its chassis.

Lutter teaches about the design concept/method of centering a containment vessel's or a "dump body" haulage load to its center of gravity by using a sequential pivoting mechanism. This sequential pivoting mechanism allows the dump body to dump material side-to-side. This adjustable mechanism greatly reduces frictional or torsional stresses on the structure and components below or supporting the containment vessel, eg., hydraulic lift cylinders and their pins, etc. (See Column 3/lines 20-34).

It is obvious to one who has ordinary skill in the art at the time of the invention that the FEA method of Chatman in conjunction the "center of gravity" design concept of Lutter (centering a containment vessel's or a "dump body" haulage load to its center of gravity by using a sequential pivoting mechanism) discloses the elements as in claim (a

thru f), ie, modeling the haulage load to the center of gravity to a support structure, adjusting boundary conditions/design parameters of the volumetric load to the truck body, strength properties or volumetric capacity of the body, modeling the volumetric load, etc.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> The invention according to claim 1 wherein the set of design parameters of the body includes a position of the body floor and a position of body sidewalls.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because it is obvious to one who has ordinary skill in the art at the time of the invention that FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body would contain the elements (eg., floor and position of the body sidewalls) as in claim 2.

4. Claims 3, 4, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim 3. The invention according to claim 2 wherein the position of the body floor includes a length of the floor.
> Claim 4.The invention according to claim 2 wherein the position of the body sidewalls includes a height of the sidewalls.
> Claim 5. The invention according to claim 4 wherein the position of the body sidewalls further includes a distance between the respective sidewalls.

> Claim 6. The invention according to claim 2 wherein the set of design parameters of the body further includes a position of the body front wall.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because this FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body would contain the volumetric elements as in claims: 3 (position of body floor/length of the floor), 4 (position and the height of the side walls), 5 (distance between the respective walls), and 6 (position of the body front wall).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> The invention according to claim 4 further including the step of adjusting the length of the body floor and the height of the body sidewalls to provide the lowest practical vertical location for the center of gravity of the three dimensional model of the hauled material.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). . Because it is obvious to one who has ordinary skill in the art at the time of the invention that FEA (UAI/Nastran) is a software simulated structural analysis, its user can change/adjust or input different volumetric configurations of the truck body (eg., length of body floor, and height of side

walls) to move the center of gravity to different points due to different boundary conditions, or volumetric loading conditions.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim 8. The invention according to claim 1 wherein the data collected from the anticipated point of use includes angles of material repose of an actual load carried in an existing vehicle body.
> Claim 9 The invention according to claim 8 wherein the angles of material repose include a front angle of material repose, a rear angle of material repose and side angles of the material repose.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because this FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body would contain the volumetric elements as in both claims 8 (model the inputted load volumes or angles of material) and 9 (front angle, rear angle, and side angles of material repose).

7. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim 10. The invention according to claim 9 wherein the field collected data further includes a representation of corner voids present in an actual load carried in an existing vehicle body.
> Claim 11. The invention according to claim 10 wherein the field collected data includes angles of material repose of and representations of corner voids present in actual loads carried in a plurality of existing vehicle bodies.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because it is obvious to one who has ordinary skill in the art at the time of the invention that FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body can be adjusted for deletions in the volumetric loading material such as corner voids which would be inputted by data (different loading or boundary conditions) derived from field collected data as in both claims 10 and 11.

8. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim 12. The invention according to claim 1 wherein the field collected data further includes a density of the load material.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because it is obvious to one who has ordinary skill in the art at the time of the invention that FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body can be adjusted for deletions in the

volumetric loading material such as corner voids or changes in material density or boundary loading conditions derived from field data.

9. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim 13. The invention according to claim 10 wherein the field collected data further includes a method for loading material into an existing vehicle body

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because it is obvious to one who has ordinary skill in the art at the time of the invention that FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body could be adjusted to different volumetric loading material methods or angles which produce different forces/boundary conditions derived from different loading conditions eg., field data from loading material on to the truck body.

10. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> 14. (Amended) The invention according to claim 10 wherein the step of developing the three dimensional volumetric model of the load to be carried in the body includes modeling the corner voids of the hauled material.

> 15. The invention according to claim 14 wherein the corner voids of the hauled material are modeled through a gradual incremental blending of the respective side angles of material repose to the front angle of material repose and a gradual incremental blending of the respective side angles of material repose to the rear angle of material repose through respective corners of the three-dimensional model of the hauled material.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). Because it is obvious to one who has ordinary skill in the art at the time of the invention that FEA is a volumetric loading analysis (stress/strain distributions of 3D models) of mechanical structures, its design parameters of the body or truck body can be adjusted for deletions in the volumetric loading material such as corner voids or changes in material density or boundary loading conditions. In addition, it is obvious to one who has ordinary skill in the art at the time of the invention, that FEA in 5,531,122 will be able to 3D model the hauled material and be edited or changed to match the appropriate specifications as designated by the user, ie., adding different angles, voids, etc., as in claims 14 and 15.

11. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim 16. The invention according to claim 14 further including the step of comparing the modeled corner voids with the field collected representation of the corner voids and adjusting the modeled corner voids as necessary such that the modeled corner voids substantially match the representation of the corner voids.
> Claim 17. The invention according to claim 15 wherein the incremental blending ofthe side angles of material repose to the front and rear angles of material repose includes dividing the respective corners of the three dimensional model into equal segments, establishing a plane in each of these segments at a respective angle

> which allows an incremental change in the angles of material repose through the corners of the three dimensional model and extending the planes until they intersect the perimeter of the body.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions. (See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). It is obvious to one who has ordinary skill in the art at the time of the invention, that FEA in 5,531,122 will be able to 3D model the hauled material and be edited or changed to match the appropriate specifications as designated by the user as in claims 17 and 18. In addition, since this FEA is software modeling, the user can enter field data that is representative of the hauled material, ie., different configurations such as side/rear angles, corner voids, the planes can modeled/meshed into elements such as tetrahedrons.

12. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> Claim18. (Amended) The invention according to claim 1 wherein the step of developing the three dimensional model of a load to be carried in the body includesmodeling the corner voids of the hauled material.
> Claim 19. The invention according to claim 1 further including the step of adjusting the set of design parameters to provide the lowest practical vertical location for the center of gravity of the three dimensional model of the hauled material.

Chatham teaches about applying Finite Element Analysis (3D Modeling) using UAI/Nastran structural software packages as the design process for a dump body and the dump body relative to the truck chassis due to hauling material loading conditions.

(See Figure 5, Column 1/lines 25-30, Column 7/lines 5-12). It is obvious to one who has ordinary skill in the art at the time of the invention, that FEA in 5,531,122 will be able to 3D model the hauled material and be edited or changed to match the appropriate specifications as designated by the user (eg., corner voids, etc.) as in claim 18. In addition, since this FEA is software modeling, the user can change the model to different configurations which would change its center of gravity to its "best" case as defined by the model as in claim 19.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chatham et al. (US 5,531,122) in view of Lutter (US 6,106,072);

> The invention according to claim 1 further including the step of adjusting the set of design parameters to allow material to be loaded into the dump body from thelowest practical vertical location.

Chatham teaches that his FEA can model both the truck body support frame's strain or elastic properties in at different loading states (eg., frame acceleration, axle housing elastic deformation (strain), and suspension response (strut pressures and displacements) of the truck body. The strain data is measured at different locations on the frame using strain gauges. (See Column 6/lines 40-55, Column 7/lines 10-20, Figures 3, 4, and 5). Because this FEA can model the truck body and support components at different vertical heights (suspension under compression), the material load can be adjusted to the lowest possible location off the truck body during the loading or the dumping of the material into the truck body. In addition, it is obvious to one who has

ordinary skill in the art at the time of the invention that a hauled material load can also be modeld using this FEA at different vertical locations to the dump body.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

U.S. Pat. No. 5,131,798 to Bell

U.S. Pat. No. 4,511,974 to Nakane

Bell and Nakane teaches respectively about a rail car and a load condition method for cargo, but not dumping material.

U.S. Pat. No. 5,650,930 to Hagenbuch

Hagenbuch teaches about measuring haulage parameters, and not modeling or designing a truck body.

U.S. Pat. No. 5,936,869 to Sakaguchi

Sakaguchi teaches about FMEA/Numerical analysis that could be applied to the design of a truck body and support structure, but he does not talk about a truck body.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rich Pecone whose telephone number is (703) 305-3188. The examiner can normally be reached on Monday thru Friday from 8:15 AM to 4:45PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax number for the organization where the application or proceeding is assigned is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.